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BRINKS HOFER GILSON & LIONE
P.O. BOX 10395
CHICAGO, IL 60610

EXAMINER	
GIBSON, RANDY W	

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/776,395
Filing Date: February 11, 2004
Appellant(s): RUDOLPH, JAMES WARREN

Joseph A. Yosick
For Appellant

SUBSTITUTE EXAMINER'S ANSWER

This is in response to the appeal brief filed 16 November 2005 appealing from the Office action mailed 10 September 2004.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

There was an appeal filed in the parent case (Application # 09/178,399, filed 10/23/1998, now abandoned.). Appellant had appealed claims containing substantially identical subject matter, which were rejected under the exact same references combined by the examiner in the same way for the same reasons. Appellant's arguments were substantially the same, and the issues were substantially the same. The examiner's rejection of all of the claims in the parent case was upheld in the Decision on Appeal in the parent case which was mailed on December 23, 2003.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,348,774	Golecki et al.	9-1994
4,964,734	Yoshida et al.	10-1990
4,217,785	Spoor	8-1980
4,375,838	Yano et al.	3-1983
4,044,920	Swartzendruber	8-1977
5,770,823	Piroozmandi	6-1998

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Golecki et al in view of Yoshida et al, Yano et al, Spoor, Piroozmandi, and Swadzendruber. Golecki et al discloses, in one embodiment, weighing parts in a furnace during a Chemical Vapor Deposition (CVD) or Chemical Vapor infiltration (CVI)

process and using the corresponding weight signal to vary process parameters, such as internal furnace pressure, reactant gas flow rate (I.E.: mass flow rate), and/or power to the heating coil (Col. 6, line 59 to col . 7, line 22), in real time (Col. 7, lines 42-52;, Col . 8, lines 52-61). In the device of Golecki et al, however, the weighing device 13 is not situated such that it can weight the entire furnace including the contents as claimed; by contrast, the weighing device of Golecki et al is located inside a chamber 19 adjacent to the main furnace chamber 1 where it only weighs the substrates 4 and the substrate supporting mandrel assembly 3.

However, Golecki et al disclose that this embodiment has some problems since they disclose that they need to inject inert gas into the weighing housing 19 to prevent vapor deposit build-up on the electronic weighing device itself, and they disclose that the weighing chamber itself needs to be held at a constant temperature to insure weighing accuracy (Col. 8, lines 1-10).

It is known in the weighing art that electronic load sensors lose accuracy when exposed to fluctuating temperatures as shown by the examples of Yano et al (Col. 1 , lines 39-48) and Spoor (Col. 1, line 20 to col. 2, line 28). Since heat rises, and since the weighing chamber of Golecki et al is attached to the top of, and is in gaseous communication with the main chamber of the CVI/CVD furnace (since the aforementioned paragraph at the top of column 8 implies that vapor from the furnace moves in and out of the weighing chamber), there is a problem with the design of the weighing device of Golecki et al that would be apparent to the ordinary practioner in the weighing art -- namely, the loss of accuracy caused by vapor deposit build-up on the

load cells and temperature induced variations in the accuracy of the electronic load cells as the furnace begins to heat up. Yoshida et al shows that one known solution to the problem of temperature related changes in the accuracy of electronic load cells when weighing items in a furnace is to relocate the load cells under the furnace (since heat rises) and to insulate it from the heated chamber (Col. 3, lines 54-59). Presumably, the same effect could be achieved by placing the load cells under the supporting legs of the furnace itself which would have the additional advantage of isolating the load cells from the vapor inside the furnace chamber (thus also solving the problem of deposit build-up mentioned by Golecki et al).

It is well known in the weighing art that a relatively fast and inexpensive way to retrofit a large vessel-like device, like the CVI/CVD chamber 1 of Golecki et al, to enable it to weigh its contents, is to simply place load cells under the supporting legs of the vessel as shown by the examples of Piroozmandi (Col. 2, line 30 to col. 3, line 54) and Swadzendruber (Col. 2, lines 50-58). It would have been obvious to the ordinary practioner to modify an existing CVI/CVD furnace chamber to include load cells under it, using the method suggested by Piroozmandi or Swartzendruber, for the purpose of monitoring weight change in the contents of the chamber and adjusting process parameters accordingly as taught by Golecki et al.

(10) Response to Argument

Background

The only issue on appeal is whether it was proper for the examiner to combine the references above under section 103 to arrive at the applicants claimed invention. If this statement is accurate, then the appellant is barred by the doctrine of *res judicata* from re-litigating the exact same issue again since the appellant has already appealed similar claims in the parent case -- which were finally rejected under section 103 using the exact same references given above combined in the same way for the same reasons (Application # 09/178,399 filed 10/23/1998, now abandoned).

Appellant filed an appeal in the parent case arguing that the 103 rejection was improper based on various arguments such as: (1) lack of motivation to combine; (2) the references are "unrelated" references; (3) non-analogous art; (4) attacking the references teachings individually rather than looking at the art as a whole; (5) even if all the references were combined the appellant's invention would still not be obvious; (6) alleging that the examiner is "not one of ordinary skill in the art"; and, (7) making an unsupported argument that the examiner must have improperly relied on some alleged outside "knowledge" unavailable to the ordinary practioner to find and combine all of the references. The Board of Appeals and Interferences found all of these arguments unpersuasive and upheld the final rejection in the parent case in a decision mailed out on December 23, 2003. Appellant allowed the parent case to become abandoned on March 31, 2004.

In it's decision in the parent case, the Board found that the only difference between the appellant's claimed system, and the system disclosed in the primary reference to Golecki et al, was the choice of the location of the load cells (the Decision on Appeal, pp. 3-4). As noted by the Board, in the Golecki et al system, the measuring load cells are part of a weighing device 13 included inside the processing furnace itself. In the appellant's claimed invention, the measuring load cells are located under the legs of the furnace instead. The examiner had argued that one of ordinary skill in the art would have found it obvious to relocate the measuring load cells to a location outside and below the furnace as claimed, using the teaching found in the above combination of references, and the Board agreed.

Appellant filed a continuation case and added claims 15-18 by preliminary amendment which were substantially identical to the claims previously appealed -- except for the fact that in each new claim, the appellant added a feature that was already disclosed in the primary reference to Golecki et al. The examiner notes that all four of the features newly added to the claims in the child case by amendment (one new feature per claim) -- namely: (i) monitoring & controlling temperature; (ii) monitoring & controlling gas flow rate; (iii) monitoring & controlling pressure; and, (iv) monitoring the reactivity of the reactant gas & controlling flow -- have bare minimum support in appellant's own written description as originally filed (A single paragraph mentions these four features in passing on page 6.). Since the appellant only briefly mentioned these features in the written description, without describing anything specific about their construction, operation or use, then presumably appellant is conceding that these

particular features, newly added to the claims in the child case, are conventional in the art. Otherwise, the claims on appeal would have lacked adequate written support in the specification as originally filed – thus violating the requirements of the first paragraph of section 112 -- and would thus be considered new matter (Which would cause claims 15-18 to be removed from the present case.).

Although the claims currently on appeal are of different scope than the ones which were previously found to be obvious by the Board in the parent -- since each independent claim now expressly mentions a feature which the examiner contends was expressly part of the system of Golecki et al all along -- the issues now on appeal are the same as the ones previously decided by the Board of Appeals and Interferences in the parent case: Would it have been obvious to the ordinary practioner to modify the system of Golecki et al to relocate the measuring load cells from inside the processing furnace as disclosed in the prior art, to underneath the supporting legs outside the furnace as now claimed, in light of the teaching of the prior art references cited and relied upon by the examiner? The Board has already decided this, and it is the examiner's position the appellant is barred by the doctrine of *res judicata* from relitigating the same issues again. See ***MPEP*** § 706.03(w).

Other than the features added to the independent claims which the examiner contends were expressly part of the Golecki et al reference all along, there seem to be no new arguments presented by the appellant that have not already been decided in the parent case. The examiner will point to these features in the Golecki et al reference as they come up.

The examiner will address the appellant's other arguments by copying portions from the previous Board Decision from the parent case where appropriate.

Appellant's Arguments under Main heading, page 12, "35 U.S.C. § 103(a) Obviousness Rejection Over Golecki et al in view of a multiple of unrelated references"

Appellant's summary of the examiner's position in this section seems to be substantially correct.

Subheading "A": Appellant Alleges that the References are Improperly Combined

The appellant alleges that that the examiner's combination of references is erroneous because the examiner has used "pure blatant hindsight" to reconstruct the appellant's claimed invention. Although appellant did not expressly argue "hindsight" in the appeal in the parent case, it was the general gist of most of the appellant's arguments in the appeal in the parent case. The appellant has not cited any legal authority to explain what the legal definition of "pure blatant hindsight" might be (As opposed to legally "impermissible hindsight", or legally "proper hindsight", discussed *infra*), and appellant did not perform any specific analysis of the examiner's reasoning to show how the examiner may have misused or misunderstood any legal rule in making the final rejection. The appellant also alleges that the examiner did not address all of the elements found in the claims. The examiner will address each of these arguments in turn.

The CCPA has stated that some degree of hindsight is inherently part of any obviousness reasoning, and is not improper in of itself since any prior art search and analysis under section 103 would otherwise be impossible. So long as the examiner's obviousness analysis takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). From MPEP § 2145 (X)(A):

> Applicants may argue that the examiner's conclusion of obviousness is based on improper hindsight reasoning. However, "[a]ny judgement on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant's disclosure, such a reconstruction is proper." *In re McLaughlin* 443 F.2d 1392, 1395, 170 USPQ 209, 212 (CCPA 1971). Applicants may also argue that the combination of two or more references is "hindsight" because "express" motivation to combine the references is lacking. However, there is no requirement that an "express, written motivation to combine must appear in prior art references before a finding of obviousness." See *Ruiz v. A.B. Chance Co.*, 357 F.3d 1270, 1276, 69 USPQ2d 1686, 1690 (Fed. Cir. 2004). For example, motivation to combine prior art references may

> exist in the nature of the problem to be solved (Ruiz at 1276, 69 USPQ2d at 1690) or the knowledge of one of ordinary skill in the art (*National Steel Car v. Canadian Pacific Railway Ltd.*, 357 F.3d 1319, 1338, 69 USPQ2d 1641, 1656 (Fed. Cir. 2004)).

Appellant never analyzes the examiner's reasoning to show how the examiner used legally "impermissible hindsight" rather than legally "proper hindsight". Appellant simply gave an unsupported conclusion, and then immediately changed the subject by alleging that certain claimed features were never addressed by the examiner in the final rejection at all.

Appellant then alleges that "nowhere does the Examiner show in this combination that the furnace temperature is monitored and changed in order to achieve the desired weight gain as required by claim 15." However, this statement by the appellant in the Appeal Brief contradicts the earlier admission that the appellant made during the interview on January 12, 2005 to get the after final amendment to claim 15 entered so that this particular feature would be expressly recited in claim 15 on appeal:

> Substance of the interview .... or any other comments: The examiner agreed to send out a supplemental Advisory Action in light of the fact that item number 2 on the previous action was incorrect. The addition of the new limitation of "monitoring the furnace temperature" was NOT a new issue since the Final Rejection mentions the fact that Golecki et al discloses controlling the power

> level of the heating coil in response to the sensed weight of the parts being formed in the CVI/CVD furnace. (Interview Summary, Paper # 01/14/05)

If appellant's argument that "nowhere does the Examiner show" this feature is correct, then this would have been a new issue added to the claims after final, and as a matter of PTO procedure, the After Final amendment would not have been entered -- and this issue would not now be appealable without the appellant doing something else to reopen prosecution – like filing an RCE. In other words, the appellant has already conceded orally to the examiner that the examiner had already addressed this feature, or else this feature would not have been allowed to have been added to claim 15 after the final rejection was made (because it would have been a new, previously unconsidered issue). The appellant should not be allowed to argue one position to get an AF amendment entered, and then take a completely contradictory position for purposes of an appeal.

One appropriate part of Golecki et al is reproduced below:

> If desired, an in-situ weighing device (e.g. an electronic balance) 13 may be used ... [a]n electric signal proportional to said weight is put out by the balance and said signal or some function of it ... may be fed into the power supply connected to the [heating] coil and/or to the pressure controller and/or to the mass flow controller to adjust or optimize the processing conditions (namely, power, pressure and precursor flow rate) in real time. (Column 7, lines 43-54)

If power to the heating coil is being regulated, then this will obviously regulate the furnace temperature since Golecki et al expressly mentions that controlling the heating coil is the primary way of controlling the furnace temperature (see also column 8, lines 52-56). As conceded by the appellant in the previously mentioned interview, the examiner had already mentioned this in the final rejection:

> Golecki et al discloses, in one embodiment, weighing parts in a furnace during a Chemical Vapor Deposition (CVD) or Chemical Vapor infiltration (CVI) process and using the corresponding weight signal to vary process parameters, such as internal furnace pressure, reactant gas flow rate (I.E.: mass flow rate), and/or power to the heating coil (Col. 6, line 59 to col . 7, line 22), in real time (Col. 7, lines 42-52; Col . 8, lines 52-61).

The examiner never addressed the argument about "monitoring" before in more detail simply because the appellant did not argue this issue before (it wasn't even expressly mentioned in the claim until the After Final amendment was entered). The device for "monitoring" the furnace temperature is the thermocouple and their equivalents expressly mentioned in Golecki at column 7, lines 17-22. Note also that Golecki et al expressly mention "determining the temperature" in column 8, lines 52-62.

Appellant's other argument that nowhere does the examiner show where in the prior art that the feature of "monitoring of the reactant gas flow .. to achieve the desired weigh gain of claim 16", equally lacks merit as it is clear that the examiner has already

expressly addressed the limitation of controlling the gas flow. Although Golecki et al does not expressly recite a device for "monitoring" the reactant flow rate, such a "monitoring" device must be inherently present; otherwise it would be physically impossible for Golecki et al to automatically control reactant flow rate as stated (IE: how can he control the flow rate if there is no way for him to "monitor" the flow rate to know what the flow rate is? "Monitoring" seems to be implied by the "intelligent sensing" mentioned in column 8, lines 52-61 of Golecki). The examiner never expressly addressed the argument about "monitoring" before in more detail simply because the appellant did not argue this issue before.

Appellant's argument that the examiner did not "even address monitoring the internal pressure ... and changing such pressure to achieve the desired weight gain as required by claim 17" equally lacks merit since the examiner had expressly addressed the limitation of controlling the internal pressure as clearly seen in the quote above. Although Golecki et al does not expressly recite a device for "monitoring" the internal pressure, such a "monitoring" device must be inherently present; otherwise it would be physically impossible for Golecki et al to automatically control the internal pressure as stated (IE: how can he control the pressure if there is no way for him to "monitor" the pressure to know what the internal pressure is? "Monitoring" seems to be implied by the "intelligent sensing" mentioned in column 8, lines 52-61 of Golecki). The examiner never expressly addressed the argument about "monitoring" before in more detail simply because the appellant did not argue this issue before.

Appellant's argument that "the rejection is silent as the monitoring the reactivity of the reactant gas and changing the gas flow to achieve the desired weight gain of a part as required by claim 18" equally lacks merit since the examiner had expressly addressed the limitation of controlling the gas flow rate in response to the change in weight (When the gas "reacts" with the substrates, they get heavier. The more reactive the gas, the faster the weight increase). If the applicant means something else by "monitoring the reactivity", note that the appellant did not specify in her arguments what that might be, and the appellant's specification does not seem to offer any explanation or details either. "Monitoring" also seems to be implied by the "intelligent sensing" mentioned in column 8, lines 52-61. The examiner never expressly addressed the argument about "monitoring" before in more detail simply because the appellant did not argue this issue before.

Appellant then analyzes Golecki and concludes, as in the earlier appeal before, that the real difference between the system disclosed by Golecki and the claimed system is the fact that "Golecki et al. do not weigh the entire furnace" (Appeal Brief, p. 14). Appellant gives a quote from In re Fritch and then concludes that "[o]ne of ordinary skill in the art would not combine the teachings of Golecki et al. ... with the teachings of the secondary references as suggested by the Examiner. There is absolutely no reason to combine Golecki et al. with any secondary reference as Golecki et al. describe the optional use of weighing devices" (Brief, p. 14). This same argument, almost *verbatim*, was made by the appellant in the parent case, and the Board ruled in its Decision in the parent case that this argument was unpersuasive:

> Appellant asserts (Brief, page 9) that "[o]ne of ordinary skill in the art would not combine the references as suggested by the Examiner." More specifically, appellant contends (Brief, page 10) that "[t]here is absolutely no reason to combine Golecki et al. with any secondary reference as Golecki describes the optional use of weighing devices." In a related argument, appellant suggests (Reply Brief, page 2) that "if Golecki wanted to weigh the entire furnace, he simply would have disclosed such an embodiment." We disagree. (Decision, p. 3).

This argument has already been ruled unpersuasive by the Board of Appeals and Interferences in the parent case based, in part, on the reasoning that "the skilled artisan would have used the teachings of the secondary references as better methods of weighing for that embodiment [shown in Fig. 1] of Golecki." (Decision, p.4). No further comment by the examiner is deemed necessary.

Appellant then states that "there is no reason to combine the primary reference with the secondary references as they are in different fields of endeavors" (Brief, p. 15). The Board has already ruled this argument unpersuasive in its earlier decision:

> We agree with the appellant that the secondary references may not be in the appellant's field of endeavor. However, we disagree with appellant's characterization of the problem solved, and thus with the conclusion that the references do not deal with the same problem as that which concerned appellant.

> Appellant did not solve the problem of continuously weighing the parts during processing in a CVI/CVD furnace, as Golecki teaches such continuous weighing. The problem actually solved by appellant is more accurately weighing the parts inside the furnace. All of the secondary references deal with problems associated with weighing parts inside a vessel and/or with weighing parts in a heated environment (which would include a furnace). Accordingly, the secondary references all relate to weighing accuracy and, therefore, are analogous art according to the second criteria of ***In re Clay***, 966 F.2d 656, 658, 23 USPQ2d 1058-59, 1060 (Fed. Cir. 1992), that the reference be pertinent to the particular problem solved. (Decision, pp. 4-5)

The appellant's analysis on page 15 to the first paragraph of page 16 of the Appeal Brief are in support of appellant's conclusion stated above. Appellant's analysis here seems to be a restatement of the analysis made on appeal in the parent case, and since the Board already ruled it unpersuasive, no further comment by the examiner is deemed necessary.

Appellant then makes the following conclusion: "the references themselves do not present any motivation to have them combined in the manner suggested by the Examiner nor has the Examiner shown such suggestion" (Brief, p. 16). This argument is not accurate since the examiner clearly articulated a motivation for combining each and every reference in the final rejection above. The Board has already ruled that this

argument was unconvincing when it held that the identical combination of references, using the same reasoning by the examiner, was proper in the appeal in the parent case:

> "Claims 1 through 14 stand rejected under 35 U.S.C. § 103 as being unpatentable over Golecki in view of Yoshida, Yano, Spoor, Pirooamandi, and Swartzendruber ... appellant has not convinced us of any error in the examiner's rejection, and we will sustain the rejection" (Decision, pp.2 & 7).

Subheading "B": "Even if Combined, The References Do Not Render Appellant's Claims Obvious"

Appellant summarizes what the claimed invention is, and makes an unsupported conclusion that this invention is not taught by the combination of references -- without explaining exactly what is missing if all the references were combined (interestingly enough, the applicant's summary of what she considers to be the invention in this section is a merely a summary of what the disclosure of Golecki by itself would have anticipated under section 102, since no mention of the location of the load cells has been referred to here (Brief, p. 16)). The examiner has already identified all of the claimed elements *infra*, and has pointed out where in each reference the particular element may be found.

The Board found a similar argument in the parent case unpersuasive:

> Appellant further states (Brief, page 11, and Reply Brief, page 5) that "[e]ven if the references were combined in the manner suggested by the Examiner, they still would not render obvious the Appellant's invention." However, appellant fails to explain exactly what would be missing ... [s]uch unsupported conclusions are not convincing." (Decision, p. 5).

No further comment by the examiner is deemed necessary.

Subheading "C": "The Examiner allegedly relies upon 'knowledge available to one of ordinary skill in the art' "

This argument was presented to the Board in the appeal in the parent case, and was ruled unpersuasive:

> We agree that a factual inquiry whether to modify a reference must be based on objective evidence in the record, not merely conclusionary statements of the examiner. ***See In re Lee***, 277, F.3d 1338, 1343, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002). Accordingly, "knowledge available to one of ordinary skill in the art" would be insufficient motivation to combine the references. However, although the examiner appears to rely upon such "knowledge," the examiner actually relies upon specific teachings in the references." (Decision, p. 6)

No further comment by the examiner is deemed necessary.

Conclusion

Appellant's statement under the "Status of Amendments Section" notwithstanding, the examiner did actually review the "actual limitations in the claims" of the present application. The only difference between the claims currently on appeal and the claims previous ruled against by the Board in its decision in the parent case was the inclusion in each independent claim of at least one feature inherently part of the CVI/CVD process disclosed by the primary reference. Applicant appears to be trying to obtain a rehearing before the Board of Appeals and Interferences to get the Board to reverse its earlier decision that the examiner's combination of a "hodge-podge" (Brief, p. 7) of references under section 103 of title 35 was proper, based on the same arguments and the same analysis by appellant that the Board had previously ruled unpersuasive in the prior appeal.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

RANDY W. GIBSON
PRIMARY EXAMINER

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Conferees:

Kamand Cuneo
SPE, 2841

Brian Sircus
SPE, 2836

BRINKS HOFER GILSON & LIONE
P.O. BOX 10395
CHICAGO IL 60610